

NYCTERIDOSTRONGYLUS UNCICOLLIS BAYLIS, 1930
(NEMATODA : TRICHOSTRONGYLOIDEA)
from *Miniopterus australis witkampi* (Megachiroptera)
from Sabah, East Malaysia

P. L. WONG and R. C. ANDERSON

SUMMARY. *Nycteridostrongylus uncicollis* Baylis, 1930 recovered from four of twelve *Miniopterus australis witkampi* Dobson (Megachiroptera) in Sabah, East Malaysia is redescribed. This is the first report of this parasite in Borneo of which Sabah forms the northeastern portion.

***Nycteridostrongylus uncicollis* Baylis, 1930 (Nematoda, Trichostrongyloidea), parasite de *Miniopterus australis witkampi* (Mégachiroptère) à Sabah (Malaisie orientale).**

RÉSUMÉ. *Nycteridostrongylus uncicollis* Baylis, 1930 parasite chez quatre sur douze *Miniopterus australis witkampi* Dobson (Megachiroptera) à Sabah (Bornéo), Malaisie Est est redécrit. C'est la première fois que ce parasite est signalé à Bornéo.

Introduction

Baylis (1930) described *Nycteridostrongylus uncicollis* from bats (*Miniopterus* sp.) in Australia. This parasite was subsequently reported from *Miniopterus fuliginosus* in Vietnam (Meszaros, 1973) and *Miniopterus schreibersi blepotis* (Temminck) in Australia (Thomas, 1959). In the present study, nematodes recovered from *Miniopterus australis witkampi* Dobson (Megachiroptera) in Sabah, East Malaysia were identified as *N. uncicollis* after comparing them with the syntypes. *N. uncicollis* is the type species of the genus and it is imperative that its morphologic characters be fully understood. Unfortunately, the original description was incomplete ; for example, the spicules and gubernaculum were not described. A redescription is provided based on the new material collected from Sabah, East Malaysia.

Methods and materials

Seven species of bats belonging to four genera were collected in the Gomantong Caves, Sabah, East Malaysia (5° 33'N, 118° 6'E). They included *Hipposideros diadema*

Department of Zoology, College of Biological Sciences, University of Guelph, Guelph, Ontario, Canada N1G 2W1.

Accepté le 15 mars 1985.

masoni (Dobson) (N = 5), *H. cervinus labuanensis* (Tomes) (25), *Miniopterus australis withampi* Dobson (12), *M. magnater macrodens* Maeda (1), *Rhinolophus philippinensis sanborni* Chasen (4), *R. c. creaghi* Thomas (27) and *Tadarida (Chaerophon) p. plicata* (Buchannan) 22). They were collected on 20, 21 and 29 June, 1984.

Syntypes of *N. unciollis* were borrowed from the British Museum (Natural History), London through the kind cooperation of Dr. D. I. Gibson.

Results

Nycteridostromylyus unciollis Baylis, 1930 (*fig. 1-13*).

General : Trichostrongyloidea ; Molineidae, Molineinae. Anterior region with prominent ventral curve. Oral opening triangular. Prominent dorsal oesophageal tooth present. Six externo-lateral and four cephalic papillae present. Amphids, small. Cuticular cephalic vesicle prominent. Cuticular flange present on ventral side of anterior region. Flange transversely striated and widest at its posterior end, originating immediately anterior to excretory pore and extending beyond oesophageal-intestinal junction. Synlophes with numerous ridges with prominent transverse striations. Ridges beginning immediately behind cephalic vesicle of both sexes. In male, ridges extending obliquely along greater part of body and then extending longitudinally for last 500 μm of body their numbers increasing from fifteen near excretory pore to eighteen at mid-body. In female, ridges extending obliquely along entire body length their numbers increasing from eleven near excretory pore to twenty at mid-body.

Male (2 specimens) : Total length 5.1, 5.4 mm. Maximum width 140, 160 μm . Cephalic vesicle 55, 39 μm long. Cuticular flange 700, 500 μm long. Nerve ring 150, 130 μm , excretory pore 170, 115 μm and deirids 180, 128 μm from anterior end. Esophagus 350, 380 μm long. Spicules equal and 490, 610 μm long. Gubernaculum with distal lateral expansion and pointed tip, 132, 155 μm long. Bursal ray 1, small. Ray 2,3 have same origin and extend to edge of bursa. Ray 4 long and thin. Ray 5,6 have same origin and slightly curved. Ray 7 small and located at base of genital cone. Ray 8, curved and tip slightly constricted. Ray 9, 10 have same origin and located at dorsal lobe of bursa. Ray 10 of left side with small process at its base. Genital cone well developed.

Female (7 specimens) : Total length 6.3-7.9 mm. Maximum width at midbody 180-210 μm . Cephalic vesicle 48-65 μm long. Cuticular flange 710-1 090 μm long. Nerve

Fig. 1. — *En face* view. *Fig. 2.* — Cross-section near excretory pore, female. *Fig. 3.* — Gubernaculum, dorsal view. *Fig. 5.* — Bursa, ventral view. *Fig. 6.* — Anterior end, lateral view. *Fig. 7.* — Cross-section near mid-body, female. *Fig. 8.* — Genital cone. *Fig. 9.* — Spicules. *Fig. 10.* — Ovejector, lateral view. *Fig. 11.* — Anterior region, lateral view. *Fig. 12.* — Tip of female tail, ventral view. *Fig. 13.* — Female tail, lateral view.

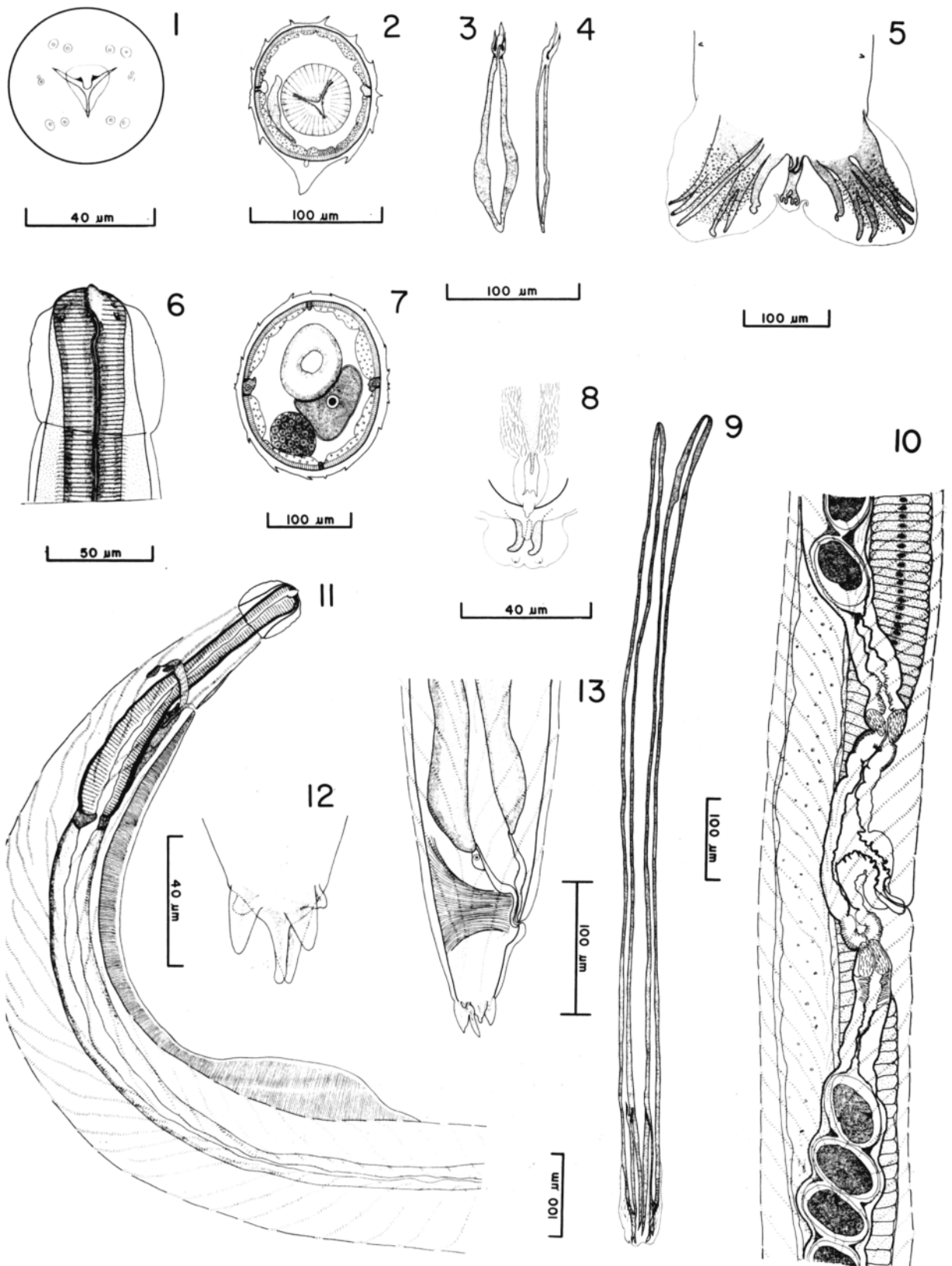


FIG. 1 à 13. — *Nycteridostromylus uncicollis* Baylis, 1930.

ring 154-195 μm , excretory pore 133-210 μm and deirids 155-200 μm from anterior extremity. Esophagus 335-440 μm long. Vulva slightly inflated and 4.3-6.0 mm from anterior end. *Vagina vera* 122-145 μm long. Anterior vestibule 125-145 μm , sphincter 40-50 μm and infundibulum 24-40 μm long. Posterior vestibule 50-75 μm , sphincter 38-45 μm and infundibulum 35-40 μm long. Tail 65-80 μm long with a median spine and two dorsal, two subventral and one ventral tubercles of varied sizes. Phasmids not observed. Eggs 56(54-59) \times 86 (82-89) μm (N = 10).

Host : *Miniopterus australis witkampii* Dobson

Prevalence : 33 % (4/12)

Intensity : 2.4 (1-4)

Location : Intestine

Locality : Gomantong Caves, Sabah, East Malaysia

Specimens : National Museums of Canada Invertebrate Collection NMCP 1985-0053.

Discussion

In the original description of *N. uncicollis*, Baylis (1930) reported that the cuticular flange at the anterior region was divided into four sections. This is probably an artifact due to poor fixation since all the specimens examined in the present study possessed smooth and uninterrupted flanges (*fig. 11*). The bursal rays of both males in this study were identical to those in the original description except for the tenth ray of the left side. This particular ray has a small process at its base which was not indicated in the original description. Finally, the morphology of the spicules and gubernaculum are described for the first time in this study. It is noted that oblique cuticular ridges extend the entire length of the body (cf. Durette-Desset, 1983).

Nycteridostrongylus uncicollis is apparently restricted to bats of the genus *Miniopterus* and its geographic distribution appears confined to South East Asia and Australia (Baylis, 1930, Thomas, 1959, Meszaros, 1973 and present study).

The only other species in the genus *Nycteridostrongylus* is *N. petersi* Durette-Desset and Chabaud, 1975 found in tree-shrews (*Tupaia aglis* (Diard) and *T. tana Raffles*) in Sabah. Betterton's (1979) report of *Nycteridostrongylus* sp. in *T. glis* in West Malaysia likely refers to this species.

Nycteridostrongylus petersi is readily distinguished from *N. uncicollis* because it lacks an oesophageal tooth and a ventral cuticular flange. These characters were used by Durette-Desset and Chabaud (1975) to create a special subgenus (*Petiellus*) for *N. petersi*.

Besides *N. uncicollis*, *Miniopterus* spp. in Asia also harbour two additional trichostrongyle species. *Molinostrongylus alatus* (Ortlepp, 1932) was found in *M. schrei* trichostrongyle species. *Molinostrongylus alatus* (Ortlepp, 1932) was found in *M. schreibersi* in Taiwan by Myers and Kunts (1964). *Molinostrongylus rhinolophi* Yamaguti, 1941 and *Strongylacantha rhinolophi* Yamaguti, 1935 were reported from *M. schreibersi* in Japan by Kagei and Sawada (1977).

ACKNOWLEDGEMENTS. We wish to acknowledge the assistance of Mr. Charles Francis, CUSO volunteer, with the Game Branch, Forest Department, Sabah, East Malaysia in helping the senior author obtain material for this study. We are most thankful to Mr. Patrick Andau, assistant director of the Game Branch who provided transportation and technical help.

REFERENCES

- BAYLIS H. : Four new trichostrongylid nematodes from Queensland. *Ann. Mag. nat. Hist.*, 1930, 6, 1-18.
- BETTERTON C. : The intestinal helminths of small mammals in the Malaysian tropical rain forest : patterns of parasitism with respect to host ecology. *Internat. J. Parasitol.*, 1979, 9, 313-320.
- DURETTE-DESSET M. C. : Keys to genera of the superfamily Trichostrongyloidea. No. 10. In : CIH Keys to the nematode parasites of vertebrates. Edited by R. C. Anderson and A. G. Chabaud. Commonwealth Agric. Bureaux, Farnham Royal, Bucks, England, 1983, pp. 1-86.
- DURETTE-DESSET M. C., CHABAUD A. G. : Sur trois nématodes Trichostrongyloidea parasites de Tupaiidae. *Ann. Parasitol. Hum. Comp.*, 1975, 50, 173-185.
- KAGEI N., SAWADA I. : Helminth fauna of bats of Japan. XVII. *Annotnes Zool. Jap.*, 1977, 50, 174-181.
- MESZAROS G. : Parasitic nematodes of bats in Vietnam I. *Parasitol. Hung.*, 1973, 6, 149-167.
- MYERS B. J., KUNTZ R. E. : Nematode parasites from mammals taken on Taiwan (Formosa) and its offshore island. *Can. J. Zool.*, 1964, 42, 863-868.
- ORTLEPP R. J. : Some helminths from South African Chiroptera. Part I. *Report of the Director of Veterinary Services and Animal Industry*, 1932, pp. 183-196.
- THOMAS P. M. : Some nematode parasites from Australian hosts. *Trans. Roy. Soc. S. Aust.*, 1959, 82, 151-162.
- YAMAGUTI S. : Studies on the helminth fauna of Japan. Part 13. Mammalian nematodes. *Jap. J. Zool.*, 1935, 6, 433-457.
- YAMAGUTI S. : Studies on the helminth fauna of Japan. Part 35. Mammalian nematodes II. *Jap. J. Zool.*, 1941, 9, 409-439.